



HLA OMT Fundamentals

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Background

- The formal definition of the HLA is composed of:

HLA Rules - A set of rules which must be followed to achieve proper interaction of simulations in a federation execution. These describe the responsibilities of simulations and of the runtime infrastructure (RTI) in HLA federations.

HLA Interface Specification - Definition of the interface functions between the RTI and simulations participating in HLA federations.

HLA Object Model Template - Common presentation format for HLA Object Models.

Object Models

- Object models provide an identification of the set of objects chosen to represent the “real world” for a specific application, including:
 - Object characteristics (attributes)
 - Static object relationships (class hierarchies, associations, aggregations)
 - Dynamic object relationships (interactions)
 - Individual object behavior

***Note: HLA Object View does not imply or require object-oriented implementation means**

HLA Object Models

Federation Object Model (FOM) - a specification of the exchange of public data among the participants in a HLA federation

- Required information
 - Object Classes
 - Object Interactions
 - Attributes/Parameters
 - Lexicon
- Optional Information
 - Object Associations
 - Composition Relationships
 - Object Model Metadata

HLA Object Models

Simulation Object Model (SOM) - a specification of the capabilities offered to federations by individual simulations

- Same information categories as FOM
- Provides “logical” representation of imported and exported data
- Provides means of judging suitability of simulation systems to participate in HLA federations
 - Facilitated by automated browsing tools (in future) and current data standardization efforts

HLA Object Model Template

The HLA OMT is a standardized presentation format for describing HLA object models

Rationale:

- **Facilitates FOM development coordination**
- **Provides a common means of describing potential federation members**
- **Facilitates the design and development of common FOM development toolsets**

OMT Components

- Object Class Structure Table
- Object Interaction Table
- Attribute/Parameter Table
 - Enumerated Datatype Table
 - Complex Datatype Table
- FOM/SOM Lexicon

Object Class Structure Table

Object Class Structure Table			
<class> (<ps>)	[<class> (<ps>)]	[<class> (<ps>)]	[<class> (<ps>)] [,<class> (<ps>)]*| [<ref>]
		[<class> (<ps>)]	[<class> (<ps>)] [,<class> (<ps>)]*| [<ref>]
	
		[<class> (<ps>)]	[<class> (<ps>)] [,<class> (<ps>)]*| [<ref>]
	[<class> (<ps>)]	[<class> (<ps>)]	[<class> (<ps>)] [,<class> (<ps>)]*| [<ref>]
	
		[<class> (<ps>)]	[<class> (<ps>)] [,<class> (<ps>)]*| [<ref>]

<class> (<ps>)	[<class> (<ps>)]	[<class> (<ps>)]	[<class> (<ps>)] [,<class> (<ps>)]*| [<ref>]
		[<class> (<ps>)]	[<class> (<ps>)] [,<class> (<ps>)]*| [<ref>]
	
...
<hr/>			
Air Vehicle(S)	Fixed Wing (S)	Fighter-Attack (S)	F-14 (PS)
			F-16 (PS)
			F-18 (PS)
		Bomber (S)	B-1B (PS)
			B-2 (PS)
	Rotary Wing (PS)		

Object Interaction Table

Object Interaction Table							
Interaction Structure		Initiating Object		Receiving Object/Area		Interaction Parameters	Init/Sense/React
		Class	Affected Attributes	Class	Affected Attributes		
<interaction>	[<interaction>]	<class> [,<class>]*	[<attribute>] [,<attribute>]* [(<comment>)]*	[<class> [,<class>]*	[<attribute>] [,<attribute>]* [(<comment>)]*	[<parameter>] [,<parameter>]*	<isr>
	[<interaction>]	<class> [,<class>]*	[<attribute>] [,<attribute>]* [(<comment>)]*	[<class> [,<class>]*	[<attribute>] [,<attribute>]* [(<comment>)]*	[<parameter>] [,<parameter>]*	<isr>

<interaction>	[<interaction>]	<class> [,<class>]*	[<attribute>] [,<attribute>]* [(<comment>)]*	[<class> [,<class>]*	[<attribute>] [,<attribute>]* [(<comment>)]*	[<parameter>] [,<parameter>]*	<isr>
...
Weapon Detonate	Weapon Denotate at Air Target	Weapon	Velocity, Acceleration, Weight, :	Air Vehicle	Velocity, Acceleration, Weight, :	Weapon Location, Warhead, Weapon Attitude,	IR
	Weapon Denotate at Ground Target	...	...	...	...	...	...

Attribute/Parameter Table

Object/ Interaction	Attribute/ Parameter	Data Type	Cardi- nality	Units	Resolution	Accuracy	Accuracy Condition	Update Type	Update Condition	T/A	U/R
<class> <Interaction>	<attribute> <parameter>	<datatype>	[<size>]	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate> <condition>	<ta>	<ur>
	<attribute> <parameter>	<datatype>	[<size>]	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate> <condition>	<ta>	<ur>
	...	...	[<size>]	...	...	...	...	...	...	...	...
	...	...	[<size>]	...	...	...	...	...	...	...	...
<class> <Interaction>	<attribute> <parameter>	<datatype>	[<size>]	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate> <condition>	<ta>	<ur>
	<attribute> <parameter>	<datatype>	[<size>]	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate> <condition>	<ta>	<ur>
	...	...	[<size>]	...	...	...	...	...	...	...	...
	...	...	[<size>]	...	...	...	...	...	...	...	...
<class> <Interaction>	<attribute> <parameter>	<datatype>	[<size>]	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate> <condition>	<ta>	<ur>
	...	...	[<size>]	...	...	...	...	...	...	...	...
	...	...	[<size>]	...	...	...	...	...	...	...	...
	...	...	[<size>]	...	...	...	...	...	...	...	...
Tank	Area	Float	1	m2	0.1 m2	perfect	always	conditional	scen events	TA	UR
	Velocity	Double	1	m/sec	1 m/sec	.01 m/sec	none	periodic	10 Hz	TA	UR
	State	Tank_Type	1	n/a	n/a	n/a	n/a	conditional	scen events	TA	UR
	Position	Rectng_Type	1	n/a	n/a	n/a	n/a	periodic	10 Hz	TA	UR
Weapon Detonate	Warhead	Wh_Type	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Related Documents

OMT Extensions: template for describing optional classes of information for HLA object models.

FEDEP Model: a description of the process used to build and execute HLA federations.

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